

## Trend Study 6-2-01

Study site name: Echo Canyon Rest Area.

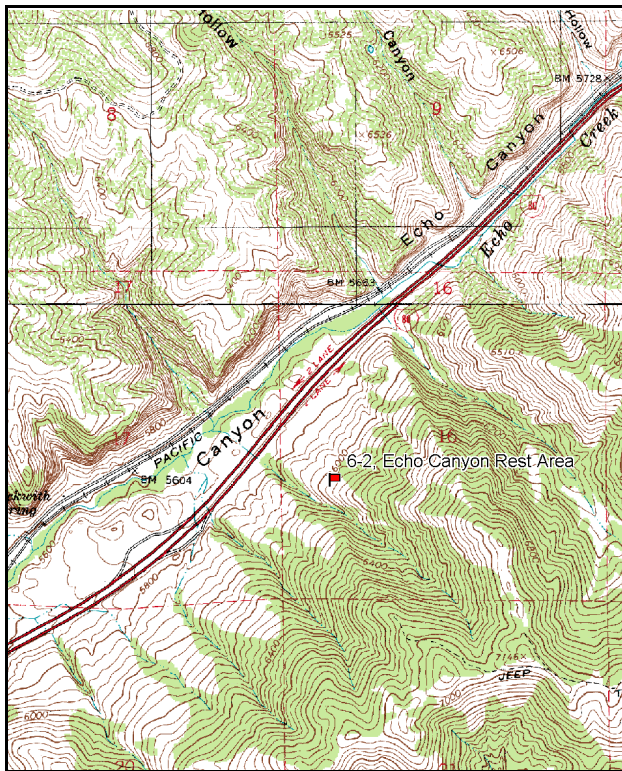
Vegetation type: Mountain Brush.

Compass bearing: frequency baseline 80 degrees magnetic.

Frequency belt placement: Line 1 (11 & 95ft), line 2 (59ft), line 3 (71ft), line 4 (34ft).

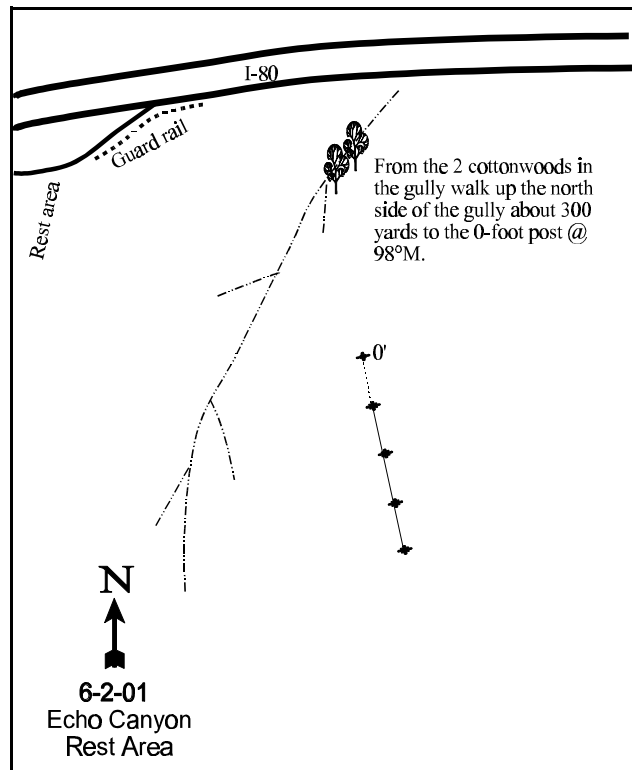
### LOCATION DESCRIPTION

Beginning at Echo Reservoir, travel northeast on Highway I-80 to the rest area (approximately 2 miles). From the rest area, follow the guard-rail on the right side of the freeway until it ends (approximately 100 yards). From the end of the guard-rail, proceed on an azimuth of 90 degrees magnetic for approximately 305 paces to a point on the left-hand or north side of the canyon. The 0-foot stake of the baseline consists of a green steel fencepost, 12"-18" high, and is marked with browse tag #7950.



Map Name: Coalville

Township 3N, Range 5E, Section 16



Diagrammatic Sketch

UTM 4537730 N 466866 E

## DISCUSSION

### Trend Study 6-2

The Echo Canyon Rest Area study originally replaced a line intercept transect established in 1977. It was located slightly uphill from Line 2 of that study, which sampled similar plant communities where true mountain mahogany was prominent. However, this site had many problems. It had a very steep south slope (>80%), rock and pavement cover combined for more than 32%, and the site showed almost no big game use. Therefore, the study site was moved up onto a nearby ridge. The study now lies on a west aspect, a slope of about 32%, and an elevation of approximately 6,000 feet. In 1999, a burn went through the area covering most of the slope where this study lies, including the study site itself. In 1996 (pre-burn), pellet group quadrat frequency showed moderately high use for deer, light use for elk, and occasional use by moose. Pellet group quadrat frequency for deer decreased by 2/3 in 2001, and no elk or moose pellet groups were sampled in quadrats. A pellet group transect read along the baseline in 2001 estimated 26 deer days use/acre (64 ddu/ha) and 7 elk days use/acre (18 edu/ha).

Soil texture on the site is classified as a sandy clay loam. Soils are moderately deep with an effective rooting depth (see methods section) estimated at almost 15 inches. This is the second deepest effective rooting depth on any of the studies within the management unit. Surface rock and pavement are not particularly abundant, yet the soil profile is moderately stony throughout. Erosion is not excessive on this moderately steep ridge because of the well dispersed vegetation and litter cover, with a fairly low percentage of bare ground. An erosion condition class assessment showed slightly eroding soils in 2001.

This site contains a moderately diverse browse community, both before and after the burn. Prior to the fire, the key browse consisted mostly of mountain big sagebrush, true mountain mahogany, bitterbrush, and serviceberry. Two other species that are usually not considered key browse, snowberry and Gambel oakbrush, were also present and had displayed some use in past readings. Mountain big sagebrush was the most abundant browse in 1996, providing 44% of the browse cover and an estimated density of 2,440 plants/acre. The increase in density of mountain big sagebrush in 1996 is due to the relocation of the transect for a more favorable site. In 1996, most of the population was mature and decadent plants, with low recruitment at 5%. The one characteristic that should be noted is that percent decadence for sagebrush decreased from about 60% in 1984 and 1990, to 39% in 1996. Some of this decrease is likely due to relocation of the transect to an area that is more suitable for sagebrush. However, drought conditions in the past most likely played a role in such high percent decadence as well. A cause for concern in 1996 was the high proportion of decadent sagebrush classified as having poor vigor or dying (56%). Use on sagebrush in 1984 was mostly heavy, and in 1996 use was mostly light to moderate. The post-burn inventory conducted in 2001 estimated mountain big sagebrush density at only 80 young plants/acre. The fire nearly eliminated this species from the site.

When the site was monitored in 2001 following the fire, it was noted that some of the other key browse species were resprouting, primarily mountain mahogany and serviceberry. A lot of the mahogany and serviceberry were classified as decadent in 2001 after being burned. However, percent decadence may have been overestimated as many of the resprouting individuals could have been classified as young. True mountain mahogany density was estimated at 420 plants/acre in 1996 (pre-burn) and 300 plants/acre in 2001 (post-burn). Both of these estimates are much lower than the 1984 and 1990 readings, due mostly to site being relocated in 1996. Use on mahogany was light in 2001, but moderate to heavy in all other readings. Serviceberry has an estimated density of 200 plants/acre in 2001, an increase from the 120 plants/acre reported in 1996. Bitterbrush is infrequent with an average density of 50 plants/acre in 1996 and 2001.

Gambel oak and stickleaf low rabbitbrush populations did not appear to be increasing in 1996. However, Gambel oak density increased from 760 stems/acre in 1996 to over 2,000 stems/acre in 2001. This species is a

vigorous sprouter following fire. Stickyleaf low rabbitbrush maintained a stable population between 1996 and 2001.

The herbaceous understory is important on this site as it provided 48% of the total vegetative cover in 1996, increasing to 77% in 2001 following the burn. A compositional change occurred between 1996 and 2001 due to the fire. In 1996, 88% of the herbaceous cover was made up of grasses. In 2001, grasses provided only 47% of the herbaceous cover, while forbs provided 53% of the cover. The increase in forbs was due primarily to two perennial species, yarrow and American vetch, as well as several annual species including pale alyssum, littleflower collinsia, holosteum, and bur buttercup. Sandberg bluegrass and bluebunch wheatgrass made up 85% of the grass cover in 1996. In 2001, both significantly decreased in nested frequency. Cheatgrass made up 14% of the grass cover in 1996, increasing to 34% in 2001. Cheatgrass increased in nested frequency in 2001, but not significantly. Annual forbs had a tenfold increase in sum of nested frequency in 2001. Annual species often increase following disturbance (fire in this case).

#### 1996 APPARENT TREND ASSESSMENT

This site was moved a short distance to sample a more representative area in 1996. The previous two assessment year summaries for 1984 and 1990 have been deleted because they would have been counter intuitive to the trend that is occurring on the new site at this time.

The trend for soil would be considered stable because of the high amounts of vegetative cover (51%) and litter cover (56%), with percent bare ground at only 7%. The key browse species is mountain big sagebrush which contributes 44% of the browse cover. Percent decadence has decreased, but 56% of the decadent plants were classified as dying or with poor vigor. This could cause a continuing loss to the population, but does appear to have become more stable with increased precipitation. All the other key browse species have very low or no decadent plants. Gambel oak seems to be stable. Trend appears mixed with sagebrush being slightly down and the remainder of the browse being stable. The herbaceous understory appears stable, providing almost half of the total vegetative cover.

#### 2001 TREND ASSESSMENT

Trend for soil is slightly down. With the burn between 1996 and 2001, litter cover decreased and percent bare ground increased. An erosion condition class assessment determined soils to be slightly eroding. Trend for browse is down due to the decline in sagebrush density, and increased decadence on several other browse species due to fire. Mountain big sagebrush density declined by 97% in 2001, with only 80 young plants/acre being sampled. Mountain big sagebrush provided 44% of the browse cover in 1996, decreasing to 0% in 2001. True mountain mahogany density decreased as well, but many of the plants are sprouting, and the population should improve in the future with recruitment of young plants being estimated at 13%. Serviceberry and bitterbrush were infrequent prior to the fire, and remain so afterward. Percent decadency on all 3 of these species increased in 2001. Gambel oak density increased from an estimated 760 stems/acre to over 2,000 stems/acre in 2001. This species is a vigorous sprouter following fire. The herbaceous understory has a stable trend. Sum of nested frequency for the two key perennial grasses, Sandberg bluegrass and bluebunch wheatgrass significantly decreased. However, sum of nested frequency for perennial forbs more than doubled. Overall trend is stable with the decrease in perennial grass frequency being offset by the increase in perennial forb frequency.

#### TREND ASSESSMENT

soil - slightly down (2)

browse - down (1)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 06 , Study no: 2

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron cristatum	-	2	-	-	-	1	-	-	-	-
G	Agropyron spicatum	<sub>a</sub> 29	<sub>a</sub> 22	<sub>c</sub> 155	<sub>b</sub> 96	14	15	60	41	6.88	6.83
G	Bromus carinatus	-	-	-	2	-	-	-	1	-	.15
G	Bromus tectorum (a)	-	-	142	189	-	-	44	66	3.30	7.93
G	Carex spp.	-	-	-	-	-	-	-	-	-	.00
G	Festuca myuros (a)	-	-	-	2	-	-	-	1	-	.00
G	Festuca ovina	-	-	4	-	-	-	1	-	.03	-
G	Koeleria cristata	-	-	3	1	-	-	1	1	.03	.00
G	Oryzopsis hymenoides	<sub>b</sub> 84	<sub>b</sub> 98	<sub>a</sub> -	<sub>a</sub> -	42	45	-	-	.00	-
G	Poa fendleriana	<sub>a</sub> -	<sub>a</sub> -	<sub>ab</sub> 6	<sub>b</sub> 14	-	-	3	6	.18	.57
G	Poa secunda	<sub>a</sub> -	<sub>a</sub> 6	<sub>c</sub> 270	<sub>b</sub> 171	-	3	85	57	13.49	8.03
Total for Annual Grasses		0	0	142	191	0	0	44	67	3.30	7.94
Total for Perennial Grasses		113	128	438	284	56	64	150	106	20.62	15.60
Total for Grasses		113	128	580	475	56	64	194	173	23.93	23.54
F	Achillea millefolium	<sub>a</sub> -	<sub>a</sub> 4	<sub>b</sub> 105	<sub>c</sub> 150	-	1	41	54	1.82	10.21
F	Agoseris glauca	-	-	-	2	-	-	-	1	-	.00
F	Alyssum alyssoides (a)	-	-	<sub>a</sub> 23	<sub>b</sub> 90	-	-	9	36	.11	3.04
F	Allium spp.	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> 4	<sub>b</sub> 85	-	-	2	42	.03	.51
F	Ambrosia psilostachya	-	-	-	1	-	-	-	1	-	.15
F	Antennaria rosea	-	-	1	1	-	-	1	1	.03	.03
F	Arabis spp.	-	-	1	7	-	-	1	3	.00	.04
F	Artemisia ludoviciana	3	-	-	-	1	-	-	-	-	-
F	Astragalus beckwithii	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 12	-	-	-	5	-	.37
F	Astragalus convallarius	-	-	3	6	-	-	1	4	.03	.16
F	Aster spp.	-	-	3	-	-	-	2	-	.03	.03
F	Castilleja linariaefolia	-	-	3	1	-	-	1	1	.03	.03
F	Calochortus nuttallii	-	-	-	3	-	-	-	3	-	.01
F	Chaenactis douglasii	<sub>b</sub> 15	<sub>c</sub> 34	<sub>a</sub> -	<sub>a</sub> -	8	19	-	-	-	-
F	Cirsium undulatum	<sub>a</sub> 11	<sub>a</sub> 2	<sub>ab</sub> 13	<sub>b</sub> 33	6	2	8	16	.11	.79
F	Collomia linearis (a)	-	-	1	7	-	-	1	4	.00	.02
F	Comandra pallida	1	-	3	-	1	-	1	-	.00	-
F	Collinsia parviflora (a)	-	-	<sub>a</sub> 12	<sub>b</sub> 168	-	-	7	58	.03	3.34
F	Crepis acuminata	-	-	3	8	-	-	1	4	.00	.10
F	Descurainia pinnata (a)	-	-	<sub>a</sub> -	<sub>b</sub> 37	-	-	-	17	-	.21

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
F	<i>Draba verna</i> (a)	-	-	a <sup>-</sup>	b <sup>57</sup>	-	-	-	21	-	.20
F	<i>Epilobium brachycarpum</i> (a)	-	-	a <sup>-</sup>	b <sup>89</sup>	-	-	-	38	-	.46
F	<i>Erigeron pumilus</i>	a <sup>-</sup>	a <sup>-</sup>	b <sup>26</sup>	b <sup>24</sup>	-	-	12	10	.65	.32
F	<i>Gayophytum ramosissimum</i> (a)	-	-	3	3	-	-	1	1	.00	.00
F	<i>Hackelia patens</i>	-	-	3	-	-	-	2	-	.03	.15
F	<i>Helianthella uniflora</i>	-	-	-	-	-	-	-	-	-	.00
F	<i>Holosteum umbellatum</i> (a)	-	-	a <sup>6</sup>	b <sup>81</sup>	-	-	2	28	.01	1.18
F	<i>Lactuca serriola</i>	-	-	-	1	-	-	-	1	-	.00
F	<i>Lomatium triternatum</i>	-	-	-	4	-	-	-	3	-	.01
F	<i>Microsteris gracilis</i> (a)	-	-	a <sup>-</sup>	b <sup>14</sup>	-	-	-	6	-	.08
F	<i>Oenothera caespitosa</i>	b <sup>14</sup>	a <sup>-</sup>	a <sup>-</sup>	a <sup>-</sup>	6	-	-	-	-	-
F	<i>Penstemon</i> spp.	-	-	1	-	-	-	1	-	.00	-
F	<i>Phlox longifolia</i>	-	-	6	3	-	-	3	1	.02	.03
F	<i>Polygonum douglasii</i> (a)	-	-	6	2	-	-	3	1	.01	.00
F	<i>Ranunculus testiculatus</i> (a)	-	-	a <sup>9</sup>	b <sup>71</sup>	-	-	5	24	.02	1.31
F	<i>Schoenocrambe linifolia</i>	a <sup>-</sup>	a <sup>-</sup>	a <sup>-</sup>	b <sup>20</sup>	-	-	-	8	-	.53
F	<i>Senecio integerrimus</i>	-	-	-	2	-	-	-	1	-	.00
F	<i>Sisymbrium altissimum</i> (a)	-	-	a <sup>-</sup>	b <sup>13</sup>	-	-	-	6	-	.22
F	<i>Verbascum thapsus</i>	a <sup>2</sup>	a <sup>-</sup>	a <sup>-</sup>	b <sup>16</sup>	2	-	-	7	-	.11
F	<i>Vicia americana</i>	-	-	a <sup>35</sup>	b <sup>120</sup>	-	-	16	43	.28	2.97
F	<i>Zigadenus paniculatus</i>	-	-	-	1	-	-	-	1	-	.03
Total for Annual Forbs		0	0	60	632	0	0	28	240	0.21	10.13
Total for Perennial Forbs		46	40	210	500	24	22	93	210	3.11	16.64
Total for Forbs		46	40	270	1132	24	22	121	450	3.33	26.77

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --  
Herd unit 06 , Study no: 2

T y p e	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Amelanchier alnifolia	6	10	.07	.63
B	Artemisia tridentata vaseyana	75	3	12.75	-
B	Cercocarpus montanus	18	11	3.73	.97
B	Chrysothamnus nauseosus albicaulis	0	2	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	55	52	3.87	5.69
B	Gutierrezia sarothrae	4	3	.06	.18
B	Opuntia spp.	1	1	-	-
B	Purshia tridentata	2	2	1.00	1.25
B	Quercus gambelii	6	9	2.57	2.22
B	Symphoricarpos oreophilus	32	32	4.96	4.35
Total for Browse		199	125	29.04	15.31

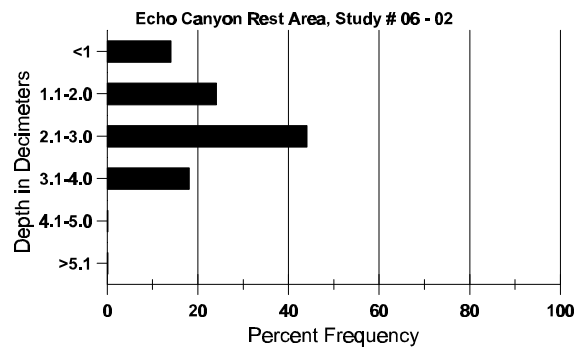
BASIC COVER --  
Herd unit 06 , Study no: 2

Cover Type	Nested Frequency		Average Cover %			
	'96	'01	'84	'90	'96	'01
Vegetation	362	379	2.75	9.00	51.15	61.48
Rock	158	161	25.75	20.00	1.75	2.42
Pavement	172	260	18.25	12.50	2.69	3.64
Litter	397	352	35.50	38.50	55.56	36.42
Cryptogams	163	52	0	.25	6.57	1.93
Bare Ground	167	251	17.75	19.75	7.26	14.42

SOIL ANALYSIS DATA --  
Herd Unit 06, Study no: 02, Echo Canyon Rest Area

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.9	65.2 (19.7)	6.7	44.7	22.0	33.3	2.9	14.4	92.8	.4

## Stoniness Index



### PELLET GROUP FREQUENCY --

Herd unit 06 , Study no: 2

Type	Quadrat Frequency	
	'96	'01
Rabbit	3	4
Moose	1	-
Elk	6	-
Deer	38	12

Pellet Transect	
Pellet Groups per Acre 01	Days Use per Acre (ha) 01
17	N/A
-	-
96	7 (18)
339	26 (64)

## BROWSE CHARACTERISTICS --

Herd unit 06 , Study no: 2

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Amelanchier alnifolia																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	1	-	-	-	-	1	-	-	-	66		1	
	96	1	-	1	1	-	-	-	-	-	3	-	-	-	60		3	
	01	3	1	-	-	-	-	-	-	-	4	-	-	-	80		4	
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	-	-	1	-	-	-	1	-	-	2	-	-	-	133	31	29	
	96	-	-	3	-	-	-	-	-	-	-	2	1	-	60	34	36	
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60	24	31	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	2	-	-	-	-	-	1	-	-	3	-	-	-	60		3	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		33%			33%			00%			-40%							
'96		00%			67%			17%			+40%							
'01		10%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	0%			
												'90	199		0%			
												'96	120		0%			
												'01	200		30%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
Y	84	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	96	4	2	-	-	-	-	-	-	-	6	-	-	-	120		6	
	01	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
M	84	-	1	3	-	-	-	-	-	-	4	-	-	-	266	32	43	4
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	5	44	19	-	-	-	-	-	-	50	-	18	-	1360	22	37	68
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21	35	0
D	84	-	1	6	-	-	-	-	-	-	4	-	2	1	466		7	
	90	1	2	-	-	-	-	-	-	-	3	-	-	-	200		3	
	96	7	28	13	-	-	-	-	-	-	21	-	23	4	960		48	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	740		37	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	860		43	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		17%			75%			25%			-58%							
'90		40%			00%			00%			+86%							
'96		61%			26%			37%			-97%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	798	Dec:	58%			
												'90	333		60%			
												'96	2440		39%			
												'01	80		0%			

A Y G R E	Form Class (No. of Plants)	Vigor Class									Plants Per Acre	Average (inches)			Total			
		1	2	3	4	5	6	7	8	9		1	2	3		4	Ht.	Cr.
Cercocarpus montanus																		
Y	84	-	40	-	-	-	-	-	-	-	40	-	-	-	2666		40	
	90	-	-	4	3	-	-	-	-	-	2	5	-	-	466		7	
	96	2	1	-	-	-	-	-	-	-	1	2	-	-	60		3	
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	84	-	2	98	-	-	-	-	-	-	100	-	-	-	6666	52	26	100
	90	-	-	11	-	1	-	-	-	-	9	3	-	-	800	36	23	12
	96	-	10	7	1	-	-	-	-	-	5	13	-	-	360	49	47	18
	01	5	-	-	-	-	-	-	-	-	5	-	-	-	100	25	31	5
D	84	-	-	4	-	-	-	-	-	-	4	-	-	-	266			4
	90	-	-	4	-	-	-	-	-	-	1	2	-	1	266			4
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		29%			71%			00%			-84%							
'90		04%			83%			04%			-73%							
'96		52%			33%			00%			-29%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	9598	Dec:		3%		
												'90	1532			17%		
												'96	420			0%		
												'01	300			53%		
Chrysothamnus nauseosus albicaulis																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:		-		
												'90	0			-		
												'96	0			-		
												'01	40			-		

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Chrysanthamnus viscidiflorus viscidiflorus																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
	01	9	-	-	-	-	-	-	-	-	9	-	-	-	180		9	
M	84	5	-	-	-	-	-	-	-	-	5	-	-	-	333	20	28	5
	90	4	-	-	-	-	-	-	-	-	1	-	3	-	266	14	19	4
	96	105	-	-	8	-	-	-	-	-	110	-	3	-	2260	15	21	113
	01	107	-	-	-	-	-	-	-	-	104	3	-	-	2140	14	22	107
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	3	-	-	-	-	-	-	-	-	1	-	2	-	60		3	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%			-20%							
'90		00%			00%			75%			+89%							
'96		00%			00%			04%			- 3%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	333	Dec:	0%			
												'90	266		0%			
												'96	2400		3%			
												'01	2320		0%			
Gutierrezia sarothrae																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	133	6	7	2
	96	6	-	-	-	-	-	-	-	-	6	-	-	-	120	7	8	6
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60	8	16	3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%			-55%							
'96		00%			00%			00%			-33%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-			
												'90	266		-			
												'96	120		-			
												'01	80		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia spp.																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	6	26	2
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	9	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			00%			00%			-50%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-			
												'90	0		-			
												'96	40		-			
												'01	20		-			
Purshia tridentata																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	1	2	-	-	-	-	-	3	-	-	-	60	34	64	3
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	12	37	1
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		00%			33%			00%			-33%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	0%			
												'90	0		0%			
												'96	60		0%			
												'01	40		50%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Quercus gambelii																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	84	15	34	-	-	-	-	-	-	-	49	-	-	-	3266		49	
	90	9	6	-	3	-	-	1	-	-	13	6	-	-	1266		19	
	96	23	-	-	-	-	-	-	-	-	23	-	-	-	460		23	
	01	102	-	-	-	-	-	-	-	-	102	-	-	-	2040		102	
M	84	-	4	5	-	-	-	-	-	-	9	-	-	-	600	68 48	9	
	90	7	-	-	4	-	-	3	-	-	14	-	-	-	933	40 23	14	
	96	10	3	-	-	-	-	-	-	-	10	3	-	-	260	16 29	13	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	33 18	0	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	2	2	-	-	1	-	-	-	-	3	2	-	-	333		5	
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	120		6	
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor						%Change				
'84		66%			09%			00%						-35%				
'90		24%			00%			00%						-70%				
'96		08%			00%			00%						+63%				
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	3866	Dec:	0%			
												'90	2532		13%			
												'96	760		5%			
												'01	2040		0%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Symphoricarpos oreophilus																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	11	5	-	1	-	-	-	-	-	17	-	-	-	340		17	
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	96	16	17	7	6	-	-	-	-	-	42	2	-	2	920	22	43	
	01	29	-	-	1	-	-	-	-	-	30	-	-	-	600	20	47	
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	1	-	-	-	-	-	-	-	-	1	-	20		1	
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		00%			00%			00%										
'90		00%			00%			00%										
'96		34%			13%			05%			-47%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	0%			
												'90	0		0%			
												'96	1280		2%			
												'01	680		3%			